## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**Claims 1-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Asahi Optical Co., Ltd. (JP 10-072552 A, see machine translation for citation) in view of Nagasawa et al. (US 6,358,611) and .

**Regarding claims 1 and 2**, JP '552 discloses a method for producing a thermoplastic resin composition containing ultrafine particles, the method comprising mixing a metal-containing organic compound with a thermoplastic resin to produce a composition containing ultrafine particles and/or ultrafine metal oxide particles (i.e. the thermoplastic resin is composed of a metal component or a metal oxide component, and an organic component is bonded to the surface of the particle) (Claim 1, [0007], [0017],[0018]) having a number-average particle size of 80 nm or less [0021] (as compared to 0.1 to 80 nm as required by said claim).

However, JP '552 does not disclose heating the resulting mixture at a temperature of at least the decomposition starting temperature and lower than the complete decomposition temperature of the metal-containing organic compound. Nagasawa et al. teaches incomplete decomposition of the metal-containing organic compound wherein the mixture is heated to temperatures above the initial decomposition temperature (C2/L14-19). JP '552 and Nagasawa et al. are analogous art concerned with the same technical difficulty, namely metal-containing

carboxylic acid composites. It would have been obvious to one of ordinary skill in the art at the time of invention to replace a known technique for microparticle formation of JP '552 with another related technique of Nagasawa et al. differing only in the use of lower temperatures, and the motivation to do so would have been less stringent conditions would be better so as to avoid polymer decomposition as well as preserving the solubilized state of the ultra fine particles in a composite film-forming material as evidenced by Nagasawa et al. (C4/L46-63). .

**Regarding claim 3**, JP '552 discloses a method wherein ultrafine particles dispersed in a thermoplastic resin are synthesized in the thermoplastic resin [0022].

**Regarding claim 4**, JP '552 discloses heat melting of the thermoplastics (Therefore, the heating temperature is higher than the melting point of the thermoplastic resin) [0024].

**Regarding claim 5**, JP'552 discloses a method containing ultrafine particles wherein the metal component is Cu, Ag, Au, Zn, Cd, Ga, In, Si, Ge, Ti, Sn, Pd, Fe, Co, Ni, Ru, Rh, Os, Ir, Pt, V, Cr, Mn, Y, Zr, Nb, Mo, Ca, Sr, Ba, Sb, and Bi [0017].

**Regarding claim 6**, JP '552 discloses exposing the resulting melted thermoplastic resin composition to a reduced pressure lower than atmospheric pressure ([0022], [0023]), wherein the heating temperature is higher than the melting point of the thermoplastic resin [0024].

**Regarding claim 7**, JP '552 discloses a method further comprising kneading a melted thermoplastic resin and the metal-containing organic compound to disperse ultrafine particles and/or ultrafine metal oxide particles in the thermoplastic resin (claim 1, [0022]), wherein the central portion of the particle is composed of a metal component or a metal oxide component [0017], an organic component is bonded to the surface of the particle [0018], and the particles

dispersed have a number–average particle size of 80 nm or less [0021] (as compared to 1 to 60 nm as required by said claim).

***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE M. BUIE whose telephone number is (571)270-3879. The examiner can normally be reached on Monday-Thursday with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571)272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. M. B./
Examiner, Art Unit 1796
10/2/2008

/Marc S. Zimmer/
Primary Examiner, Art Unit 1796